

ROUNDUP³⁶⁰

Hip & Pelvis

Neuraxial anaesthesia and large joint arthroplasty

■ Neuraxial anaesthesia is a well-studied anaesthetic modality and there is much evidence to support its use either in combination or alone in both accelerated discharge programmes and standard arthroplasty care pathways. The most recent evidence would suggest that neuraxial anaesthesia is preferable in patients undergoing primary total hip and knee arthroplasty surgery. Neuraxial analgesia has been associated with decreased operative blood loss, decreased venothrombotic events, and quicker recovery. There is a perceived problem with neuraxial anaesthesia in patients with sepsis due to the risk of seeding to the subarachnoid space. These concerns have restricted its use in many centres in patients with periprosthetic joint infection (PJI) undergoing surgery. A research team from **Philadelphia (USA)** reported their cohort study of 539 patients, all of whom underwent revision surgery for infected arthroplasties.¹ In this case series patients received a mixture of anaesthesia types, with each patient undergoing an average of 2.8 operations. The authors divided patients into those receiving neuraxial anaesthesia alone, general anaesthesia alone and a mixture during different surgeries. The headline results reported in this series were no episodes of meningitis in any patients and a single episode of epidural abscess, putting the incidence at 0.13% in

this large case series. This study appears to determine that neuraxial anaesthesia is safe in a large population of patients with PJI. The authors make the slightly surprising observation that systemic infections were actually lower in this patient cohort compared with those who underwent general anaesthesia. This study can potentially change practice and supports the use of neuraxial anaesthesia in PJI patients, but we struggle here at 360 to see the potential causal link between a lower systemic infection rate and neuraxial anaesthesia.

Revision total hip arthroplasty: factors associated with re-revision surgery

■ Complications occur after total hip arthroplasty (THA), infection being one of the most significant. Minimising the risk of infection requiring subsequent revision surgery is a clinical priority. Many previous studies have delineated factors that contribute to the incidence of revision after THA, but few studies have evaluated the causes of re-revision surgery. This study from **Los Angeles (USA)**, based on the Kaiser Permanente total joint replacement registry, uniquely looked at surgeon and implant factors, in addition to patient factors, as reasons for performing re-revision THA.² As expected, younger patients were more likely to undergo re-revision as implants wear with time and may have a finite lifespan. Experienced surgeons

who perform multiple revisions had lower re-revision rates, and un cemented stems had fewer revisions. Finally, metal-on-polyethylene THA were more likely to be revised than ceramic-on-polyethylene THA implants, possibly due to trunnionosis, and metal-on-constrained polyethylene were more likely to be revised, possibly due to poor host soft tissue and recurrent dislocations that would not be prevalent in a metal-on-polyethylene patient population. This study has implications in terms of potentially sending patients who require revision to higher-volume revision surgeons for better outcomes and may affect the implants used for fixation in revision THA.

Acetabular version and clinical outcomes in impingement surgery

■ In the subtle world of hip impingement, more and more evidence is pointing to 'combined' radiographic measures with no individual geometry or factor clearly associated with either poor outcomes or successful treatment. Hence, increasing focus is being placed on concepts such as combined version. Researchers in **New York (USA)** set out to establish the value or otherwise of traditional proximal femoral version and the combined version (McKibbin index) in influencing outcomes following arthroscopic correction of symptomatic femoral acetabular impingement (FAI).³ The research team used their own established register to investigate the influence

on PROMS outcomes (Harris Hip Score; International Hip Outcome Tool; Hip Outcome Score) of both McKibbin index and femoral version. The research team were able to recruit 243 patients to their study with mean final follow-up of just shy of two years (12 to 42 months). Overall there were significant improvements in all PROMS measures, with the majority of patients achieving at least the MCID in all outcome measures with a mean improvement of 20 points on the Harris Hip Score. Although the authors noted significantly smaller improvements in outcome in patients with relative femoral retroversion, the McKibbin index had no discernible effect on outcomes. While this paper supports the current view that impingement symptoms are a combination of both femoral version and acetabular/femoral geometry, it does not support the use of a combined version measurement. Use of a method such as Murphy's for measurement of femoral anteversion would seem to be the gold standard in both prediction of outcomes and surgical selection for FAI surgery.

Hip precautions may be ineffective

■ A staple of post-operative care in the majority of centres following a hip arthroplasty is the instigation of a bundle of physiotherapy-led 'precautions', usually a combination of lifestyle restrictions, modifications and exercises with the aim of reducing the incidence of hip dislocation in the immediate post-operative

period. Despite these widely adopted strategies (which are both expensive in therapist time and inconvenient for patients), there is little in the way of conclusive data to support the use of these precautions in the peri-operative period. Aiming to plug this gap in the literature, authors from **Geldrop (The Netherlands)** set out to establish if a systematic review of the literature would shed any conclusive light on the topic.⁴ The review team conducted a thorough review of the indexed literature using Medline and the Cochrane library, identifying 119 potentially eligible articles for inclusion in the review. The study team included six comparative studies and randomised controlled trials describing the outcomes of 1122 post hip arthroplasty patients. There were in total 14 dislocations across the whole group (1.5% in the restricted group vs 1% in the unrestricted group). In terms of functional outcomes, the satisfaction scores were better and the return to normal activities quicker in the unrestricted group. The review team were unable to find any particular differences between the various surgical approaches included in their review. This review is interesting in that there appears to be enough evidence out there not just to suggest that an expensive and time-consuming procedure used in common practice all over the world may not be beneficial, but, in terms of outcomes may actually be harmful: increasing dislocation rates, and affecting rates of return to function and levels of patient satisfaction.

Implant selection and cost-effectiveness

■ Hip surgeons are in the enviable position of having an excellent and reliable operation with favourable long-term results. Despite the ongoing research into new bearing surfaces, hip designs and improving outcomes, for the most part modern proven prostheses all offer excellent long-term results. There are many

years of available registry reporting that could lead to the conclusion that cemented stems and poly cups offer the most optimal outcomes with the best longevity. Registries are of course a mixed bag, with many different implant designs and diagnoses, and they report an evolution sometimes over many decades of hip practice, so answering the 'which is best' question is a complex one. More modern cost-effectiveness analysis is an underused way of answering the 'which is best' question.

Researchers from **Coventry (UK)** used modern cost-effectiveness analysis techniques to establish the cost-effectiveness of hip arthroplasty in UK arthroplasty registry.⁵ The research team used a Markov method to establish the cost effectiveness of THA divided by category. They examined the five most commonly used combinations of bearing surface and fixation using data recorded by the NJR for England and Wales. This was then linked to Kaplan-Meier analysis and data supplied by the NHS supply chain to undertake a cost-effectiveness analysis. The differences in quality of life years between different categories of implant were extremely small and differences in cost were also marginal (£2500 to £3000 in the same time period). The results of this study suggest that there is no evidence to support cemented *versus* uncemented THA, or a particular bearing combination, on remunerative grounds alone. With poorly performing implants becoming rare (yes, a result from registry efforts), we can likely improve more by focusing on operative techniques to avoid early revision (muscle damage, dislocation and infection).



Femoroacetabular impingement in the older age group

■ The beady eyes of the editorial board here at 360 alighted on a paper at the complete opposite end of the age and symptom spectrum this month. Making an interesting counterpiece to the two European studies on femoroacetabular impingement (FAI) and slipped upper femoral epiphysis (see Children's orthopaedics, abstracts 2 and 5), researchers in **California (USA)** set out to look at the other end of the age

spectrum to improve understanding of FAI.⁶ They identified the Osteoporotic Fractures in Men Study as a unique opportunity to establish what the prevalence and symptomatology of FAI is in the older age group. This cohort includes a whopping 8051 male patients, all over the age of 65. At the other end of the age spectrum, we may find FAI hip morphotypes do not necessarily lead to hip pain or osteoarthritis (OA). The study team reviewed the plain radiographs taken as part of this study, grading them for signs of FAI (based around centre:edge angle and the presence of cam or pincer deformity) and OA grade, and correlated this to reported pain levels. In 8051 male hips (> 65 years old), a high prevalence of pincer (57%, defined by centre:edge angle > 39°), cam (29%) and mixed-type FAI (14%) was found. Although there is of course a fairly significant selection bias, as in this cohort, men with total hip joints had to be excluded. However, in the remaining cam type hips there was a reported reduction in hip pain scores without the presence of OA, compared with hips without FAI. Both pincer and mixed types of FAI were associated with

radiographic OA but not with hip pain. This study raises a fascinating point on causation and association. Although our understanding of impingement is increasing and this study is limited in that the histories of each patient are not known, it does contribute significantly to what is known on the top. Clearly, patients with relatively advanced impingement of all types do not necessarily develop OA or degenerative changes. In addition to the patient's loading history, we likely need to know more about the 3D relation of femoral and acetabular parameters and inherent cartilage quality to find better correlation with pain and OA.

Multiple revision in hip arthroplasty

■ While there is no getting away from complications following any type of surgery, let alone fairly significant surgery like THA, minimisation of complications is absolutely key to reducing the risk of revision surgery. Although much has been published regarding factors that contribute to the risk of revision after THA, there are precious few reports of risk factors for re-revision surgery. Researchers at Kaiser Permanente in **California (USA)** looked uniquely at surgeon, patient and implant factors that might predispose to the need for re-revision THA.² The Kaiser Permanente registry included 629 revision arthroplasties over the period of the study, of which 10% had undergone re-revision during the same period. In terms of overall survivorship analysis, five-year survival was around 85% and the adjusted odds models developed to predict the need for re-revision identified surgical experience, fixation type, bearing type and patient age as predictors for second revision. The risk of re-revision increased by a factor of three with cemented implants, and was reduced by a factor of three when using ceramic-on-polyethylene as opposed to metal-on-polyethylene. This is a slightly unusual finding and

one possible explanation may be trunnionosis as wear is unlikely to be the explanation in a relatively small sample followed for a short period of time. Perhaps less surprisingly, metal-on-constrained-polyethylene was more likely to be revised due to poor host soft tissue and recurrent dislocations. This study raises some really important questions surrounding who performs revision surgery. Perhaps the establishment of specialist revision centres and

ensuring revisions are performed by higher-volume revision surgeons for better outcomes should become a healthcare priority.

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